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ecology and environment, inc.

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International Specialists in the Environment

MEMORANDUM

DATE: January 15, 1988

TO: John Osborn, FIT-RPO, USEPA, Region X

FOR: Joyce Crosson, RSCC, USEPA, Region X

THRU: for David Buecker, FIT-OM, E&E, Seattle

FROM: Lila Accra, Chemist, E&E, Seattle
Andrew Hafferty, Senior Chemist, E&E, Seattle

SUBJ: QA of Case 8383 (Inorganics)
Monsanto

REF: F10-8702-06

CC: Raleigh Farlow, DPO-ESD, USEPA, Region X
Gerald Muth, DPO, Region X Laboratory, Manchester
John Tilstra, DPO, USEPA, Region VIII
Deborah Flood, HWD-SM, USEPA, Region X
Jeffrey Whidden, E&E, Seattle

The Quality Assurance review of two samples, Case 8383, collected from Monsanto, has been completed. Two soil samples were analyzed at low level for TCL Inorganics by Rocky Mountain Analytical Laboratory of Arvada, California. The samples were numbered:

MJB-573 MJB-574

Data Qualifications

The following comments refer to the laboratory performance in meeting the Quality Control specifications outlined in IFB WA 87-K-025--027.

1) Timeliness - Acceptable

Samples were collected on November 4, 1987 and were digested for AA and ICP analyses on November 20. The AA and ICP analyses were performed on December 8 and 9, 1987. The samples were digested for mercury analysis on November 30, and were analyzed for mercury on December 1, 1987.

2) Initial Calibration - Acceptable

All ICP results fell within the control limits of 90-110% of the true values. All furnace AA results fell within the control limits of 90-110% of the true values for all analytes. Tin and mercury fell within the control limits of 80-120% of the true values.

3) Continuing Calibration - Acceptable

All ICP results fell within the control limits of 90-110% of the true values. All furnace AA results fell within the control limits of 90-110% of the true values for all analytes. Tin and mercury fell within the control limits of 80-120% of the true values. Note: The low standards for the AA calibration curves for selenium and lead analysis were at a concentration of 10 ppb. The current Statement of Work (SOW No. 787) requires that the low standard for AA calibration curves be at Contract Required Detection Limits (CRDL). CRDL for both of these elements is 5 ug/L. No action was taken.

4) Instrument Detection Limits - Acceptable

All Instrument Detection Limits (IDL) are lower than the CRDL.

5) Blanks - Acceptable

The concentration of aluminum in the Preparation Blank was greater than the IDL, but below CRDL.

Blank Number	Element	Concentration ug/l	CRQL ug/l
PB	Aluminum	9.6	200

Since the concentration of aluminum is not over the CRDL, no action was taken.

6) ICP Interference Check - Acceptable

All parameters for the Interference Check Sample were within the control limits of 80-120% of the true value.

7) Laboratory Control Sample - Acceptable

Recoveries for all parameters for both ICP and AA analysis were within the control limits required by SOW No. 787.

8) Duplicate Sample Analysis

Relative Percent Difference (RPD) for selenium exceeded QC limits.

Sample	Matrix	Element	RPD	QC Limits
MJB-573	Soil	Selenium	102%	20%

Therefore, selenium results for furnace AA soil analysis are flagged as estimated (J), although the qualitative presence of the analyte is confirmed.

9) Spiked Sample Analysis - Acceptable

Matrix spike recoveries for all elements were within the QC limits of 75-125%.

10) ICP Serial Dilution - Acceptable

All parameters for the ICP Serial dilution were within the control limits of less than 20% RPD.

11) Furnace AA - Acceptable

All Furnace AA results were within QC limits.

12) Mercury Analysis - Acceptable

All Mercury results were within QC limits.

13) Cyanide Analysis - NR

14) Sample Analysis

A CRDL standard sample was analyzed.

The Standard Addition final concentration calculations are in error by a factor of 20 on the Standard Addition Results sheets in both the raw data section and on form VIII for arsenic, selenium, and thallium. However, raw data sheets for AA analysis and final sample concentrations reported on Form I are calculated correctly. Therefore, no action was taken.

Data Use

The usefulness of the data is based on the criteria outlined in the "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses" (R-582-5-5-01).

Upon consideration of the above comments, the data is ACCEPTABLE for use except where flagged with data qualifiers which modify the usefulness of individual values.

Additional data packages associated with this project are expected from CLP or EPA laboratories.

Data Qualifiers

U - The material was analyzed for, but was not detected. The associated numerical value is an estimated sample quantitation limit.

J - The associated numerical value is an estimated quantity because quality control criteria were not met or concentrations reported were less than the CRQL.

R - Quality Control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification.

Q - No analytical result.

N - Presumptive evidence of presence of material (tentative identification).

B - The element was found in the laboratory blank as well as the sample.

M - Mass spectral criteria for positive identification were not met. However, in the opinion of the laboratory, the identification is correct based on the analyst's professional judgement.

F - Concentration of this element exceeds either the Primary or Secondary Drinking Water Standard listed in the Safe Drinking Water Act of 1974.

INO/870206 (for WP USE ONLY)

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJB574

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 8383 SAS No.: _____ SDG No.: MJB573

Matrix (soil/water): SOIL Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 11/06/87

% Solids: 84.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C
7429-90-5	Aluminum	3620	
7440-36-0	Antimony	7.3	U
7440-38-2	Arsenic	0.94	U
7440-39-3	Barium	46.4	
7440-41-7	Beryllium	0.24	U
7440-43-9	Cadmium	8.0	
7440-70-2	Calcium	53600	
7440-47-3	Chromium	44.4	
7440-48-4	Cobalt	1.4	U
7440-50-8	Copper	19.9	
7439-89-6	Iron	3790	
7439-92-1	Lead	1.2	
7439-95-4	Magnesium	976	
7439-96-5	Manganese	35.7	
7439-97-6	Mercury	0.12	U
7440-02-0	Nickel	20.1	
7440-09-7	Potassium	706	
7782-49-2	Selenium	3.5	U
7440-22-4	Silver	1.2	U
7440-23-5	Sodium	354	U
7440-28-0	Thallium	0.47	U
7440-62-2	Vanadium	113	
7440-66-6	Zinc	101	
	Cyanide		

Color Before: BLACK Clarity Before: _____ Texture: COARSE

Color After: BLACK Clarity After: _____ Artifacts: _____

Comments:

ARSENIC VALUE REPORTED AT AN ADDITIONAL 10X DILUTION

SELENIUM VALUE DETERMINED BY MSA

ppt 15-88

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MJB573

Lab Name: ROCKY MOUNTAIN ANALYTICAL Contract: 68-01-7476

Lab Code: ENSECO Case No.: 8383 SAS No.: _____ SDG No.: MJB573

Matrix (soil/water): SOIL Lab Sample ID: _____

Level (low/med): LOW Date Recieved: 11/06/87

% Solids: 65.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C
7429-90-5	Aluminum	25900	
7440-36-0	Antimony	79.2	
7440-38-2	Arsenic	248	
7440-39-3	Barium	159	
7440-41-7	Beryllium	0.30	U
7440-43-9	Cadmium	2140	
7440-70-2	Calcium	202000	
7440-47-3	Chromium	1220	
7440-48-4	Cobalt	1.8	U
7440-50-8	Copper	144	
7439-89-6	Iron	12400	
7439-92-1	Lead	183	
7439-95-4	Magnesium	7300	
7439-96-5	Manganese	149	
7439-97-6	Mercury	0.30	
7440-02-0	Nickel	215	
7440-09-7	Potassium	17700	
7482-49-2	Selenium	430	I
7440-22-4	Silver	73.2	
7440-23-5	Sodium	6330	
7440-28-0	Thallium	74.5	
7440-62-2	Vanadium	2260	
7440-66-6	Zinc	15800	
	Cyanide		

Color Before: BROWN Clarity Before: _____ Texture: COARSE

Color After: BLACK Clarity After: _____ Artifacts: _____

Comments:

ARSENIC, SELENIUM AND THALLIUM VALUES DETERMINED BY MSA

LEAD VALUE REPORTED AT AN ADDITIONAL 20X DILUTION

1550-58